



DEPARTMENT OF THE NAVY

NAVAL AIR SYSTEMS COMMAND
NAVAL AIR SYSTEMS COMMAND HEADQUARTERS
WASHINGTON, DC 20361 -0001

IN REPLY REFER TO
NAVAIRINST 5420.38
AIR-5313
10 Aug 89

NAVAIR INSTRUCTION 5420.38

From: Commander, Naval Air Systems Command

Subj: AIRCREW SYSTEMS ADVISORY PANELS AND MAINTAINER ADVISORY PANELS IN
AERONAUTICAL SYSTEMS

Ref: (a) MIL-STD-1472
(b) MIL-H-46855
(c) AD-1410 (NOTAL)
(d) NAVAIRINST 4355.8C (NOTAL)
(e) NAVAIRINST 4355.7C (NOTAL)

1. Purpose. To establish policy, responsibilities, and procedures within the Naval Air Systems Command (NAVAIR) for the formation, operation, and functions of Aircrew Systems Advisory Panels and Maintainer Advisory Panels.

2. Scope. This instruction applies to any major aeronautical weapon system acquisition, development, update, or engineering change under the management of the Commander, Naval Air Systems Command.

3. Definitions

a. Aircrew Systems Advisory Panel (ASAP) is a design evaluation and fleet advisory panel authorized and sponsored by a program manager-air (PMA). The ASAP is only a design advisory panel and works in conjunction with the Research, Development, Test and Evaluation (RDT&E) engineering support community.

b. Maintainer Advisory Panel (MAP) is a technical advisory panel, analogous to the ASAP, which provides maintainer-oriented guidance in support of Design For Maintainer (DFM) objectives of references (a) through (c).

4. Background. Fleet personnel are a valuable information resource to the RDT&E community. Interaction with fleet personnel in ASAP's and MAP's permits the assessment of user interface options and increases the likelihood of user acceptance early in system development. The panels also give fleet personnel a meaningful and effectual role in guiding a specific design by applying their recent operational and mission-relevant experience. The employment of ASAP's and MAP's represents a reliable, cost effective, and expedient method of applying human engineering design criteria of references (a) through (c). Considering the merged capabilities of designers and users, the ASAP and MAP can impel a common objective - the development of safe, operable, easily-



S/N 0808LD0545980

10 Aug 89

maintainable, and mission-optimized systems that do not incur costly design changes at later dates from failures to properly integrate operator and maintainer considerations into the system during the design process. Historically, ASAP's and MAP's have functioned without formal policy and procedures or uniform participation by human engineering. Policy and procedures are needed in view of their increasing employment.

5. Policy. ASAP's and MAP's will be established and operated for appropriate U.S. Navy and Marine Corps programs when determined necessary by the cognizant Assistant Program Manager, Systems and Engineering (APM, S&E). The formation, operation, and activities of ASAP's and MAP's will comply with the guidelines in this instruction.

6. Responsibilities

a. PMA's via cognizant APM (S&E) in the Systems Engineering Management Division (AIR-511) are responsible for

- (1) determining requirement for establishment of ASAP's and MAP's;
- (2) coordinating ASAP and MAP establishments and operations with fleet activities, NAVAIR cognizant divisions, and prime contractors;
- (3) providing resources for ASAP and MAP and direct planning, establishment, operations, manning, travel and tasking;
- (4) executing applicable tasks and procedures;
- (5) providing or assigning ASAP and MAP chair; and
- (6) resolving ASAP and MAP recommendations. (Only PMA's have the contractual authority to direct design changes).

b. Crew Station Design and Human Factors Engineering Branch (AIR-5313) is responsible for assisting in establishing, managing, and operating the ASAP's and MAP's, and ensuring representation of qualified human engineers in panel constituencies. Specifically, cognizant NAVAIRHQ (AIR-531) project support officers (PSO's) are responsible for

- (1) reviewing and evaluating ASAP and MAP requirements at program initiation, recommending conference schedules, and supporting the PMA or APM (S&E) as required. AIR-531 PSO's can serve as alternate ASAP and MAP chairpersons, if requested;
- (2) providing or assigning human engineering representation to the ASAP and MAP, and coordinating functions and responsibilities of field activity human engineering panel members;
- (3) incorporating human engineering design guidance and requirements in system design change recommendations;
- (4) assigning needed technical support functions and responsibilities via form NAVAIR 3930/1, AIRTASK and Work Unit Assignment, to appropriate

NAVAIR field activities for ASAP and MAP participation.

(5) coordinating human engineering action items assigned by the ASAP and MAP chair; and

(6) coordinating relevant human engineering trade-off studies, project reports, and analyses with fleet and other members of ASAP's and MAP's.

c. Cognizant Assistant Program Manager, Logistics (APML's) under the Logistics Management Division (AIR-410), Logistics and Maintenance Policy Division (AIR-411), and the Reliability and Maintainability Branch (AIR-5165) are responsible for assisting the designated MAP chairperson and AIR-5313 in meeting DFM objectives, evaluating maintainer features and impacts of system and aircraft designs, recommending improvements and changes to deficient designs, and providing qualified technical engineering representatives to the MAP. Cognizant APML and project engineers are responsible for

(1) representing or providing representation by qualified maintainability engineers in MAP constituencies;

(2) reviewing and evaluating MAP-proposed change recommendations;

(3) assigning needed technical support functions and responsibilities via form NAVAIR 3930/1 to appropriate NAVAIR field activities for MAP participation; and

(4) reviewing and evaluating relevant studies and evaluations, design reviews, data submitted under reference (c), and reports associated with project DFM and foolproof concerns.

d. ASAP and MAP members are responsible for providing a combined operational and RDT&E input into the review and evaluation of evolving system designs. Members are responsible for advising the PMA, via the APM (S&E) of system qualities, deficiencies, and improvements in areas of mission effectiveness, user acceptability, safety, man-machine interface, and crew station layout.

7. Procedures

a. ASAP's and MAP's will operate in a design advisory capacity only.

b. The need for ASAP's and MAP's to support program development will be determined by the cognizant APM (S&E) and approved by the PMA at program initiation. Human engineering PSO's in AIR-5313 will be notified of the determination and requested to provide relevant support.

c. The PMA will appoint the cognizant APM (S&E) as chair for the ASAP and MAP. The chairperson may appoint an alternate chairperson for the ASAP, to alleviate schedule conflicts. The MAP will be chaired by the PSO's (AIR-5313) or designate in the event it is not chaired by the APM (S&E).

d. Member constituency of ASAP's will include Navy civilian or military human engineers and applicable military fleet users (i.e., pilots, naval

flight officers, enlisted aircrew, Operational Test and Evaluation Force representatives and instructor personnel). Training and Administration of Reserves (TAR) personnel should be included in ASAP membership in aircraft UPDATE programs where system evolution knowledge can be beneficial. Selection of human engineering ASAP representatives is a responsibility of the AIR-531 PSO. Selection of military operational ASAP members is an APM (S&E) responsibility.

e. Fleet members when appropriate, should be selected to represent east and west coast mission and operational differences. The number of members in ASAP's varies according to system, mission, and development needs. Size should be minimized for manageability, but platform-crew compliment, mission and RDT&E expertise should be fully represented. In most cases, ASAP size for single and dual-place aircraft (i.e., fixed and rotary-wing) should not exceed six. For multi-place aircraft and avionics systems with multi-platform applications, size should not exceed 8-10.

f. Member constituency of MAP's will include Navy civilian or military human engineers experienced in DFM applications, other cognizant project engineers, appropriate military fleet maintainers (e.g., organizational level and in-flight personnel with applicable Naval Enlisted Codes (NEC's), if available). Like the ASAP, the size of the MAP should be minimized but user community and RDT&E expertise should be fully represented. Size guidelines expressed in paragraph 7e of this instruction apply.

g. The chairperson will initiate the establishment of ASAP's and MAP's by requesting nominations from applicable fleet activities via letter. The APM (S&E) is free to use informal means to request ASAP and MAP nominees. As general guidance, requests for U.S. Navy ASAP and MAP military fleet representatives are typically made via cognizant Type Commander to squadron commands. For U.S. Marine Corps programs, requests are made to squadrons via Air Group. Fleet activities solicited should represent the diversities and cross sections of mission and operational environments of relevant platforms to ensure uniform and realistic participation of the entire platform user community. When to establish an ASAP or MAP depends upon the acquisition schedule, type of procurement contract and award (i.e., single- or multi-award) and program-unique functions of the advisory panels. In general, panels should be established prior to a Preliminary Design Review (PDR) at the beginning of the Full Scale Engineering Development (FSED) phase. Some system acquisitions, however, require that panels be formed during the Demonstration and Validation (DEM and VAL) phase when awards are made to two (or more) contractors for competitive parallel developments. In these situations ASAP's and MAP's should be established and operated during the DEM/VAL phase.

h. Fleet activities (e.g., squadron commanders), when requested, should provide sufficient information via letter on ASAP and MAP military nominees to enable the chair to assess qualifications (as defined below). Acceptance of nominees rests with the ASAP and MAP chair.

i. Individual prerequisites and criteria for military fleet personnel membership in ASAP's and MAP's are:

(1) Members will be able to serve for a minimum tenure of 18 months (preferably 24 months).

(2) Members will represent their parent activity and respective operational environments.

(3) Members will have a minimum of 12 months of relevant operational experience.

(4) Naval/Marine Corps officer rank should not exceed the O4 level (unless the user community comprises higher levels).

(5) Naval enlisted aircrew rates should represent those of the platform crew which typically should not exceed E-7 paygrade.

(6) Maintenance personnel should possess applicable primary NEC's, if already determined for the platform (usually known for existing system upgrades). Panel size can be reduced by qualifying nominees holding secondary NEC's and members who are cross-trained.

j. ASAP and MAP members can be requested to review and assess relevant aspects of trade-off studies, analyses, technical reports, and contractor data deliverables (e.g., Human Engineering Design Approach Document - Operator and Maintainer, Crew Station Mockup Reports, mission analyses, etc.). Members of ASAP's and MAP's will participate as technical and operational advisors and provide information at the events listed below. Cognizant APM's (S&E) are ultimately responsible for these events and may elect, therefore, to send only selected representatives (e.g., ASAP chair, AIR-531 PSO, one east coast and one west coast operational representative) to various reviews to coordinate issues for entire panels.

(1) Design reviews (e.g., Preliminary Design Reviews, Critical Design Reviews).

(2) Crew station configuration mockups and demonstrations, inspections, and reviews per conditions of reference (d).

(3) Maintenance mockups and inspections.

(4) Foolproof certification conferences.

(5) Crew station working groups.

(6) Crew station lighting mockups and demonstrations, inspections, and reviews per conditions of reference (e).

(7) Design simulations, demonstrations, empirical investigations and evaluations.

(8) Design change review process.

k. The chair will announce by letter all ASAP and MAP meetings and reviews, provide agendas and report minutes of ASAP and MAP events. The chair

will provide necessary direction and resources to fleet activities for temporary duty and the performance of other related functions of ASAP and MAP members. ASAP and MAP meetings should be announced at least 45 days prior to convening. Agendas should be distributed at least 30 days before a meeting. The chair also coordinates the "host" functions and activities assigned to the prime contractor. In general, contractor functions include:

- (1) Provision of facilities, meeting rooms, and mockups.
- (2) Representation of cognizant personnel at ASAP and MAP reviews.
- (3) Response to ASAP and MAP action items.
- (4) Presentation of project overviews and technical briefs regarding design goals, approaches and rationale.
- (5) Provision of an ASAP and MAP coordinator.
- (6) Preparation of agendas for contractor hosted events.
- (7) Preparation and distribution of ASAP/MAP minutes when requested by APM (S&E).

1. ASAP and MAP member recommendations for aircraft and system design changes will be submitted at respective reviews for chair consideration. The chair will coordinate or forward all recommendations and supportive information at the appropriate design review or event. If no design review is scheduled, recommendations will be forwarded to the PMA. Final approval of a recommended ASAP and MAP action or design modification will follow the program's normal design change approval procedure. In the event that ASAP change recommendations conflict with MAP recommendations, respective panel chairs will provide justification and impact analyses for PMA review and resolution.

m. ASAP and MAP meetings can be held at contractor or government facilities. Operating procedures will comply with the following general guidelines:

- (1) At the first ASAP and MAP meeting, the chair will arrange an administrative and technical program overview for panel members and describe their role, functions, responsibilities and planned meeting schedule within the program.
- (2) The chair will explain Navy-contractor responsibilities, interrelations and authorities to all present establishing the PMA as the sole authority regarding design change decisions.
- (3) At each scheduled review event, ASAP and MAP members will be provided a technical progress and status brief.
- (4) At each review event, ASAP and MAP members will evaluate and critique, as required, appropriate system design aspects presented by the contractor.

(5) ASAP and MAP member critiques and concerns will be documented by individual reviewers using form NAVAIR 4355/1, Recommended Change Mockups and Inspections.

(6) Recommended changes will be submitted to the chair in a follow-on, Navy-only review meeting for discussion by respective panels. The chair will determine the validity of the recommended changes and document them by the end of the Navy meeting.

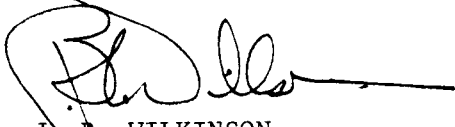
(7) At the conclusion of the Navy review meeting, a Navy-contractor meeting will be held to discuss recommendations and potential changes, their justification in terms of operator and maintainer interfaces, and implementation impact. Based on these iterative reviews and contractor responses to recommended changes, the chair will recommend approval or disapproval to the PMA.

(8) Action items resulting from the joint meeting will be assigned to appropriate contractor representatives or ASAP and MAP members prior to adjournment.

(9) Design change recommendations, upon concurrence and approval by the PMA, and in consideration of contractor responses and tradeoffs (e.g., costs) will be formally submitted to the appropriate design control group.

(10) Results and minutes of each ASAP and MAP review event will be published within 45 days after the event by the chair. All recommended changes, action items (with respective action and reporting schedules), and approvals and disapprovals will be documented in the minutes. Results of action items not requiring written reports will be presented at the succeeding review event.

8. Forms. NAVAIR 3930/1, AIRTASK/Work Unit Assignment, may be obtained from NAVAIRHQ Forms Stock Room. NAVAIR 4355/1, Recommended Change - Mockups/Inspections are stocked by AIR-5112.



J. B. WILKINSON

Distribution: (see next page)

NAVAIRINST 5420.38

10 Aug 89

Distribution: FKA1A (established quantity); others 2 copies

SNDL: FKA1A (Deputy Commander, NAVAIR Acquisition Executive and Deputy Commander for Operation, Assistant Commanders, Comptroller, Command Special Assistants, Program Directors, Designated Program Managers, Directorate Directors, and Office and Division Directors);

Copy to: (2 copies each unless otherwise indicated)

SNDL: 21A; 24A; 24A1; 24A2; 23C3; 24J1; 24J2; 26F3; 42E; 46B; C84B (Morgantown(1 copy)); FKA1A (AIR-07D A/L (1 copy), AIR-71232 (10 copies), AIR-71233B (40 copies); FKM27 (NPPSO-NDW C/L); FKQ6A; FKQ6H; FKR

Stocked: Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120-5099